Periscope.

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ANATOMY AND PHYSIOLOGY.

Sensitive Nerve Endings in Striated Muscles.

Dr. C. Rouget (La France Méd., July 24th, 1896) studying the motor nerve endings in tadpoles by means of impregnating living muscles with methylin-blue, was able to determine the existence of sensitive muscular nerves which terminate on the striated fibres, but outside of the sarcolemma, while the terminal motor nerves are in direct contact with the contractile substance. These two classes of nerve endings are, therefore, not situated on the same plane in the fibre, but are separated by a narrow space, which allows of their being photographed (microscopically) simultaneously. The sensitive endings never present the sudden swellings or inflections like the axis cylinders of motor nerves, but always retain their characteristic mode of ending, such as, for instance, in the cornea, the skin, etc. Furthermore, the course of motor nerve endings, always running parallel with the axis of the striated fibres, differentially from sensitive nerves, the endings of these being directed obliquely or transversely to the muscular elements. Again, each striated fibre is supplied with one or more motor nerve endings, while those of the sensitive fibres are far less numerous, with quite long intervals between them. These nerve endings are most thickly strewn in the deeper layers of muscles, where the terminal motor fibres are also most abundant. The author concludes that the two foregoing classes of nerves, being in direct contact with the contractile elements, form, with the muscular fibre, the hypothetic nervous arc of Charles Bell, by means of which a cerebral impulse is transmitted to a muscle by one nerve, and the condition of the muscle is communicated to the brain by another.

Macalester.

On the Course of the Taste Fibres.

In the Edinburgh Medical Journal, for April, 1897, A. F. Dixon examines the arguments in favor of the passage of the taste fibres to the brain by the fifth nerve roots, and those which opposed to this tend to show that they pass in with the roots of the facial and the glossopharyngeal. On anatomical grounds, and from the results of embryological experiments by himself and others, he is inclined to favor the latter view of the case.

Allen.

The Internal Secretions of the Thyroid and Suprarenal Glands. W. D. Halliburton, M.D., F.R.S. (The Practitioner, Jan., 1897.)

Recent research, acording to the above authority, has shown that most, if not all, of the so-called ductless glands form a secretion, and this "internal secretion" leaves the gland by the venous blood and the lymph, to become distributed to other parts of the body. Many glands which possess ducts and form an "external" secretion, also form an "internal" secretion, like the liver, pancreas, testis and kidney. Among ductless glands the thyroid has attracted most attention, and practical clinical results have closely followed experimental research, notably in the treatment of cretinism and myxœdema. The suprarenal bodies have recently also excited much interest, but as yet no sure results have followed practical use of suprarenal extracts in the treatment of Addison's disease. Halliburton turns his attention especially to the physiological facts concerning the thyroid and suprarenal glands, which he claims lie at the roots of pathology and form the groundwork for the rational treatment of disease. When ductless glands were first studied from a scientific standpoint, they were supposed to be excretory organs rather than secretory. So the thyroid was supposed to excrete a mucinoid substance, and when the gland was absent mucin was supposed to accumulate in the body generally, whence came the diseases myœdema, sporadic cretinism and cachexia strumipriva. Halliburton claims there are two erroneous suppositions in this hypothesis: first, the colloid material poured into the acini by the thyroid epithelium was believed to be mucin, but it is not; and second, mucin does not collect in the body generally. Mucin is only temporarily superabundant, as in all imperfectly fibrillated and embryonic connective tissues. When these tissues become permeated by fibres and by fat, the mucin dissappears. The most marked symptoms of myxœdema are of a nervous character, both in human beings and in animals which have undergone extirpation of the thyroid. The colloid is now considered a secretion. It has been traced into the lymphatics, and the part to which it is especially of service is the central nervous system. When the "internal" secretion ceases the nutrition of the brain is particularly affected. Since it became practically known that thyroid extracts relieve myxœdematous and similar conditions investigators have sought for the active chemical agent or agents secreted by the thyroid, and to which the extracts owe their efficacy. Though this search is not yet complete some interesting facts have come to light. Among these is the discovery that there are certain substances in the thyroid which contain iodine in organic combination. Bauman, of Freiburg, found this *thyroidin*, an element hitherto unknown as an integral part of living animal structures. It is claimed and some clinical evidence seems to prove, that this thyroidin exerts beneficial effects just as do the thyroid extracts. It has also been found in small quantities in the thymus. Thyroidin is a proteid found in the colloid substance, which contains both iodine and phosphorus. But whether the proteids of the thyroid alone contain the active principles or whether the non-proteid constituents, too, are of influence, as Fränkel and Drechsel claim, is yet to be determined. The thyreo-antitoxin found by Fränkel has as yet not been proven efficacious by clinical trial.

Then turning his attention to the supra-renal bodies, Halliburton simply and concisely reviews the work of various experimenters, notably Vulpian, Manasse and Fränkel, concluding that the sphygmogenin of Vulpian is the active agent in the production of heightened blood-pressure. Sphygmogenin is a reducing substance of unknown chemical nature, but certainly contains nitrogen, and acts in some regards like pyrocatechin, but differs from the latter in that it does not reduce Fehling's solution. Fränkel claims sphygmogenin is a nitrogenous derivative of the ortho-dioxy-benzene series, and has promised further experiments relating to its practical use.

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